UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/677,472	10/02/2003	Richard D. Dettinger	ROC920030173US1	8488

46797 7590 09/20/2007
IBM CORPORATION, INTELLECTUAL PROPERTY LAW
DEPT 917, BLDG. 006-1
3605 HIGHWAY 52 NORTH
ROCHESTER, MN 55901-7829

EXAMINER	
MORRISON, JAY A	

ART UNIT	PAPER NUMBER
2168	

MAIL DATE	DELIVERY MODE
09/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

48

UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

MAILED

SEP 20 2007

Technology Center 2100

BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/677,472
Filing Date: October 02, 2003
Appellant(s): DETTINGER ET AL.

Gero G. McClellan
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 6/11/2007 appealing from the Office action mailed 1/11/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Olson et al. ('Olson' hereinafter) (Publication Number 2001/0016843) and Chu (Patent Number 5,956,707).

(9) Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olson et al. ('Olson' hereinafter) (Publication Number 2001/0016843) in view of Chu (Patent Number 5,956,707).

As per claim 1, Olson teaches

A computer-implemented method of using a logical model to query physical fields of physical data entities, comprising: (see abstract and background)

providing a logical model stored in physical storage space and logically describing the physical fields, the logical model comprising logical fields corresponding to respective physical fields (taking a virtual source and physical source and mapping columns, paragraph [0082]), and wherein each logical field is defined by the logical model to include an access method describing a manner of accessing the corresponding respective physical field; (virtual query, paragraph [0083])

wherein the abstract query is defined with respect to at least one logical field of the logical model and wherein at least one value is specified for the at least one logical field; (binding plan maps between virtual and physical, paragraph [0082])

wherein the modified abstract query is defined with respect to the at least one logical field; (binding plan maps between virtual and physical, paragraph [0082]) and wherein the transformed physical query includes a reference to a physical field of at least one of the physical fields, the physical field corresponding to the at least one logical field. (binding plan maps between virtual and physical, paragraph [0082])

Olson does not explicitly indicate "and providing a runtime component stored in physical storage space and configured to change at least one element of an abstract query to produce a modified abstract query which, when executed in the form of a transformed physical query, returns results, the modifying being directed to satisfying a result set criterion with the returned results".

However, Chu discloses "and providing a runtime component stored in physical storage space and configured to change at least one element of an abstract query to produce a modified abstract query which, when executed in the form of a transformed physical query, returns results, the modifying being directed to satisfying a result set criterion with the returned results" (relaxes, column 4, lines 36-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "and providing a runtime component stored in physical storage space and configured to change at least one element of an abstract query to produce a modified abstract query which, when executed in the form of a transformed physical query, returns results, the modifying being directed to satisfying a result set criterion with the returned results" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 2,

Olson does not explicitly indicate “the at least element is the value and further comprising changing, by the runtime component, the at least one value by increasing or decreasing the value”.

However, Chu discloses “the at least element is the value and further comprising changing, by the runtime component, the at least one value by increasing or decreasing the value” (column 4, lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “the at least element is the value and further comprising changing, by the runtime component, the at least one value by increasing or decreasing the value” would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 3,

Olson does not explicitly indicate “changing, by the runtime component, the at least one element by removing the at least element from the abstract query.”

However, Chu discloses “changing, by the runtime component, the at least one element by removing the at least element from the abstract query” (reject, column 6, lines 11-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "changing, by the runtime component, the at least one element by removing the at least element from the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 4,

Olson does not explicitly indicate "changing, by the runtime component, the at least one element with respect to a weight assigned to the element, the weight indicating a relative priority of changing the at least element relative to other elements in the abstract query."

However, Chu discloses "changing, by the runtime component, the at least one element with respect to a weight assigned to the element, the weight indicating a relative priority of changing the at least element relative to other elements in the abstract query" (relaxation order, column 6, lines 6-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "changing, by the runtime component, the at least one element with respect to a weight assigned to the element, the weight indicating a relative priority of changing the at least element relative to other elements in the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 5, Olson teaches

the at least one logical field of the logical model (paragraph [0084]).

Olson does not explicitly indicate "has an associated element modification parameter defining a parameter for changing, by the runtime component, the at least one element."

However, Chu discloses "has an associated element modification parameter defining a parameter for changing, by the runtime component, the at least one element" (relaxation level, column 6, lines 10-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "has an associated element modification parameter defining a parameter for changing, by the runtime component, the at least one element" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 6,

the at least one logical field of the logical model (paragraph [0084]).

Olson does not explicitly indicate "has an associated element modification attribute indicating that the at least element specified in the abstract query for the at least one ... field may be modified by the runtime component."

However, Chu discloses "has an associated element modification attribute indicating that the at least element specified in the abstract query for the at least one ... field may be modified by the runtime component" (relaxation level, column 6, lines 10-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "has an associated element modification attribute indicating that the at least element specified in the abstract query for the at least one ... field may be modified by the runtime component" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 7, Olson teaches

the at least one element is user-defined. (paragraph [0067])

As per claim 8, Olson teaches

the abstract query, including the result set criterion, is user-defined. (paragraph [0078])

As per claim 9, Olson teaches

the physical data entities comprise a plurality of tables in a database. (paragraph [0067])

As per claim 10,

Olson does not explicitly indicate "the result set criterion is part of the abstract query."

However, Chu discloses "the result set criterion is part of the abstract query" (column 4, lines 19-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the result set criterion is part of the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 11, Olson teaches

"with reference to the logical model" (paragraph [0081])

Olson does not explicitly indicate "transforming, by the runtime component ... the abstract query into the physical query."

"transforming, by the runtime component ... the abstract query into the physical query" (column 4, lines 19-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "transforming, by the runtime component … the abstract query into the physical query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 12, Olson teaches

A computer-implemented method of returning a desired result set for a query, comprising: (see abstract and background)

providing a logical model stored in physical storage space and to logically describing physical fields of physical data entities, (taking a virtual source and physical source and mapping columns, paragraph [0082]) the logical model comprising logical fields corresponding to respective physical fields and each having an associated modification parameter, (isomorphic query, paragraph [0080]) and wherein each logical field is defined by the logical model to include an access method describing a manner of accessing the corresponding respective physical field; (binding plan maps between virtual and physical, paragraph [0082])

receiving an abstract query comprising a result set criterion and selection criterion comprising at least one of the logical fields of the logical model; (isomorphic query, paragraph [0080]) associated with the at least one of the logical fields of the selection criterion and is directed toward satisfying the result set criterion. (run query, paragraph [0080])

Olson does not explicitly indicate "and manipulating the abstract query to produce a modified abstract query which, when executed, returns results; wherein the manipulating is, at least in part, defined by the modification parameter."

However, Chu discloses "and manipulating the abstract query to produce a modified abstract query which, when executed, returns results; wherein the manipulating is, at least in part, defined by the modification parameter" (relaxes, column 4, lines 36-43).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "and manipulating the abstract query to produce a modified abstract query which, when executed, returns results; wherein the manipulating is, at least in part, defined by the modification parameter" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 13,

Olson does not explicitly indicate "iteratively performing the manipulating until the returned results satisfy the result set criterion."

However, Chu discloses "iteratively performing the manipulating until the returned results satisfy the result set criterion" (repeated, column 4, lines 53-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "iteratively performing the manipulating until the returned results satisfy the result set criterion" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 14,

Olson does not explicitly indicate "the result set criterion comprises a result set size specification."

However, Chu discloses "the result set criterion comprises a result set size specification" (at least, column 6, lines 13-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the result set criterion comprises a result set size specification" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 15,

Olson does not explicitly indicate "the selection criterion comprises a specified value for the at least one of the logical fields of the selection criterion and wherein manipulating the abstract query comprises manipulating the specified value."

However, Chu discloses “the selection criterion comprises a specified value for the at least one of the logical fields of the selection criterion and wherein manipulating the abstract query comprises manipulating the specified value” (column 4, lines 44-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “the selection criterion comprises a specified value for the at least one of the logical fields of the selection criterion and wherein manipulating the abstract query comprises manipulating the specified value” would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 16,

Olson does not explicitly indicate “manipulating the value comprises at least one of: increasing the specified value; decreasing the specified value; and removing the specified value from the abstract query.”

However, Chu discloses “manipulating the value comprises at least one of: increasing the specified value; decreasing the specified value; and removing the specified value from the abstract query” (column 4, lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “manipulating the value comprises at least one of: increasing the specified value; decreasing the specified value; and removing the specified value from the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 17,

Olson does not explicitly indicate "manipulating the specified value comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query."

However, Chu discloses "manipulating the specified value comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query" (column 4, lines 44-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "manipulating the specified value comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 18,

Olson does not explicitly indicate "manipulating the abstract query is done with respect to a weight assigned to an element of the abstract query, the weight indicating a relative priority of changing the element relative to other elements in the abstract query."

However, Chu discloses "manipulating the abstract query is done with respect to a weight assigned to an element of the abstract query, the weight indicating a relative priority of changing the element relative to other elements in the abstract query" (relaxation order, column 6, lines 6-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "manipulating the abstract query is done with respect to a weight assigned to an element of the abstract query, the weight indicating a relative priority of changing the element relative to other elements in the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 19, Olson teaches

A computer-implemented method of building queries, comprising: (see abstract and background)

providing a logical model stored in physical storage space and logically describing physical fields of physical data (taking a virtual source and physical source and mapping columns, paragraph [0082]), the logical model comprising logical fields corresponding to respective physical fields (binding plan, paragraph [0082]), and wherein each logical field is defined by the logical model to include an access method describing a manner of accessing the corresponding respective physical field; (binding plan maps between virtual and physical, paragraph [0082])

receiving an abstract query defined with respect to at least one logical field of the logical model and comprising a user-specified value for the at least one logical field. (isomorphic query, paragraph [0080])

Olson does not explicitly indicate "and programmatically manipulating an element of the abstract query to produce a modified abstract query which, when executed, returns results; the manipulating being directed to satisfying the result set criterion with the returned results", "and a result set criterion specifying at least a size of a desired result set."

However, Chu discloses "and programmatically manipulating an element of the abstract query to produce a modified abstract query which, when executed, returns results; the manipulating being directed to satisfying the result set criterion with the returned results" (relaxes, column 4, lines 36-43), " and a result set criterion specifying at least a size of a desired result set" (user can relax, column 1, lines 25-27; at least (n), column 6, lines 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "and programmatically manipulating an element of the abstract query to produce a modified abstract query which, when executed, returns results; the manipulating being directed to satisfying the result set criterion with the returned results", "and a result set criterion specifying at least a size of a desired result set" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 20, Olson teaches

with reference to the logical model (paragraph [0082])

Olson does not explicitly indicate "transforming ... the modified abstract query into a form consistent with the physical data."

However, Chu discloses "transforming ... the modified abstract query into a form consistent with the physical data" (column 3, lines 17-31).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "transforming ... the modified abstract query into a form consistent with the physical data" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 21, Olson teaches

the at least one logical field ... in the logical model (paragraph [0082])

Olson does not explicitly indicate "has an associated value modification parameter defined ... and wherein the manipulating comprises manipulating the user-specified value in a manner limited by the associated value modification parameter."

However, Chu discloses “has an associated value modification parameter defined … and wherein the manipulating comprises manipulating the user-specified value in a manner limited by the associated value modification parameter” (relaxation level, column 6, lines 10-11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “has an associated value modification parameter defined … and wherein the manipulating comprises manipulating the user-specified value in a manner limited by the associated value modification parameter” would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 22,

Olson does not explicitly indicate “the manipulating is performed iteratively until producing the modified abstract query which, when executed, returns results satisfying the result set criterion.”

However, Chu discloses “the manipulating is performed iteratively until producing the modified abstract query which, when executed, returns results satisfying the result set criterion” (repeated, column 4, lines 53-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “the manipulating is performed iteratively until producing the modified abstract query which, when executed, returns results satisfying the result set criterion" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 23,

Olson does not explicitly indicate "manipulating the element comprises at least one of: increasing the user-specified value; decreasing the user-specified value; and removing the user-specified value from the abstract query."

However, Chu discloses "manipulating the element comprises at least one of: increasing the user-specified value; decreasing the user-specified value; and removing the user-specified value from the abstract query" (column 4, lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "manipulating the element comprises at least one of: increasing the user-specified value; decreasing the user-specified value; and removing the user-specified value from the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 24,

Olson does not explicitly indicate “manipulating the element comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query.”

However, Chu discloses “manipulating the element comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query” (column 4, lines 44-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “manipulating the element comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query” would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 25,

Olson does not explicitly indicate “manipulating the element is done with respect to a weight assigned to the element, the weight indicating a relative priority of changing the element relative to other elements in the abstract query.”

However, Chu discloses “manipulating the element is done with respect to a weight assigned to the element, the weight indicating a relative priority of changing the element relative to other elements in the abstract query” (relaxation order, column 6, lines 6-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "manipulating the element is done with respect to a weight assigned to the element, the weight indicating a relative priority of changing the element relative to other elements in the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 26, Olson teaches

A computer-implemented method for returning a specified result size set for a query, comprising: (see abstract and background)

(a) receiving a query comprising at least one condition, an associated value for the condition and a user-specified results criterion; (paragraph [0078])

(b) changing a first element of the query to produce a modified query; (query matched with source and instantiated, paragraph [0080])

(c) running the modified query to produce a result set; (query run, paragraph [0080])

and (e) running the different modified query to produce a different result set for output to a user; (query run, paragraph [0080])

Olson does not explicitly indicate "(d) if the result set does not satisfy the user-specified results criterion, changing one of the first element and a second element of the modified query to produce a different modified query", "wherein the user-specified result criterion specifies a number of modified queries to be generated by changing the first or second element".

However, Chu discloses "(d) if the result set does not satisfy the user-specified results criterion, changing one of the first element and a second element of the modified query to produce a different modified query" (relaxes, column 4, lines 36-43), "wherein the user-specified result criterion specifies a number of modified queries to be generated by changing the first or second element" (user can relax, column 1, lines 25-27; at least (n), column 6, lines 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "(d) if the result set does not satisfy the user-specified results criterion, changing one of the first element and a second element of the modified query to produce a different modified query", "wherein the user-specified result criterion specifies a number of modified queries to be generated by changing the first or second element" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 27,

Olson does not explicitly indicate "changing either of the first element and the second element comprises at least one of: increasing the associated value; decreasing the associated value; and removing the associated value from the query."

However, Chu discloses “changing either of the first element and the second element comprises at least one of: increasing the associated value; decreasing the associated value; and removing the associated value from the query” (column 4, lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of “changing either of the first element and the second element comprises at least one of: increasing the associated value; decreasing the associated value; and removing the associated value from the query” would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 28,

Olson does not explicitly indicate “changing either of the first element and the second element comprises at least one of: adding a condition to the query; removing the at least one condition from the query; and changing the at least one condition with the query.”

However, Chu discloses “changing either of the first element and the second element comprises at least one of: adding a condition to the query; removing the at least one condition from the query; and changing the at least one condition with the query” (column 4, lines 44-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "changing either of the first element and the second element comprises at least one of: adding a condition to the query; removing the at least one condition from the query; and changing the at least one condition with the query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 29,

Olson does not explicitly indicate "changing either of the first element and the second element is done with respect to a weight assigned to the element, the weight indicating a relative priority of changing the element relative to other elements in the abstract query."

However, Chu discloses "changing either of the first element and the second element is done with respect to a weight assigned to the element, the weight indicating a relative priority of changing the element relative to other elements in the abstract query" (relaxation order, column 6, lines 6-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "changing either of the first element and the second element is done with respect to a weight assigned to the element, the weight indicating a relative priority of changing the element relative to other elements in the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 30,

Olson does not explicitly indicate "repeating (d) and (e) until the result set satisfies the user-specified result criterion."

However, Chu discloses "repeating (d) and (e) until the result set satisfies the user-specified result criterion" (column 4, lines 53-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "repeating (d) and (e) until the result set satisfies the user-specified result criterion" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 31, Olson teaches

the user-specified result criterion is a result set size criterion. (paragraph [0078])

As per claim 32, Olson teaches

wherein each generated query produces a result set size specified by the user-specified result criterion. (paragraph [0078])

As per claim 33, Olson teaches

A computer readable storage medium containing a program which, when executed, performs an operation with respect to abstract queries and a logical model comprising a plurality of logical field definitions mapping to physical fields of physical data, the operation comprising: (see abstract and background)

receiving an abstract query defined with respect to at least one logical field of the logical model and comprising (i) a user-specified value for the at least one logical field (user specifies, paragraph [0078])

the manipulating being directed to satisfying the result set criterion with the returned results; (query, paragraph [0080])

wherein the modified abstract query is defined with respect to the at least one logical field; (isomorphic query, paragraph [0080])

wherein the transformed physical query includes a reference to at least one of the physical fields, the at least one physical field corresponding to the at least one logical field; (isomorphic query, paragraph [0080]; binding plan maps between virtual and physical, paragraph [0082])

and, wherein each logical field definition references an access method describing a manner of accessing a respective physical field. (binding plan maps between virtual and physical, paragraph [0082])

Olson does not explicitly indicate “and manipulating an element of the abstract query to produce a modified abstract query which, when executed in the form of a transformed physical query, returns results", "and (ii) a result set criterion specifying at least a size of a desired result set".

However, Chu discloses "and manipulating an element of the abstract query to produce a modified abstract query which, when executed in the form of a transformed physical query, returns results" (relaxes, column 4, lines 36-43), "and (ii) a result set criterion specifying at least a size of a desired result set" (user can relax, column 1, lines 25-27; at least (n), column 6, lines 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "and manipulating an element of the abstract query to produce a modified abstract query which, when executed in the form of a transformed physical query, returns results", "and (ii) a result set criterion specifying at least a size of a desired result set" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 34,

Olson does not explicitly indicate "the abstract query comprises a limitation parameter limiting the manipulating of the element."

However, Chu discloses "the abstract query comprises a limitation parameter limiting the manipulating of the element" (WITHIN, column 5, lines 45-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the abstract query comprises a limitation parameter limiting the manipulating of the element" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 35,

Olson does not explicitly indicate "the manipulating is performed iteratively until producing the modified abstract query which, when executed, returns results satisfying the result set criterion."

However, Chu discloses "the manipulating is performed iteratively until producing the modified abstract query which, when executed, returns results satisfying the result set criterion" (column 4, lines 53-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the manipulating is performed iteratively until producing the modified abstract query which, when executed, returns results satisfying the result set criterion" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 36, Olson teaches

the at least one logical field ... in the logical model (paragraph [0082])

Olson does not explicitly indicate "has an associated element modification parameter defined ... wherein the manipulating is limited by the associated element modification parameter."

However, Chu discloses "has an associated element modification parameter defined ... wherein the manipulating is limited by the associated element modification parameter" (WITHIN, column 5, lines 45-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "has an associated element modification parameter defined ... wherein the manipulating is limited by the associated element modification parameter" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 37,

Olson does not explicitly indicate "manipulating the element comprises at least one of: increasing the user-specified value; decreasing the user-specified value; and removing the user-specified value from the abstract query."

However, Chu discloses "manipulating the element comprises at least one of: increasing the user-specified value; decreasing the user-specified value; and removing the user-specified value from the abstract query" (column 4, lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "manipulating the element comprises at least one of: increasing the user-specified value; decreasing the user-specified value; and removing the user-specified value from the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 38,

Olson does not explicitly indicate "manipulating the element comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query."

However, Chu discloses "manipulating the element comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query" (column 4, lines 44-53).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "manipulating the element comprises at least one of: removing a condition from the abstract query; adding a condition to the abstract query; and changing a condition with the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 39,

Olson does not explicitly indicate "the manipulating is performed with respect to a weight assigned to the element, the weight indicating a relative priority of manipulating the element relative to other elements in the abstract query."

However, Chu discloses "the manipulating is performed with respect to a weight assigned to the element, the weight indicating a relative priority of manipulating the element relative to other elements in the abstract query" (relaxation order, column 6, lines 6-8).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the manipulating is performed with respect to a weight assigned to the element, the weight indicating a relative priority of manipulating the element relative to other elements in the abstract query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 40, Olson teaches

the physical data comprise a plurality of tables in a database. (paragraph [0067])

As per claim 41,

Olson does not explicitly indicate "transforming, with reference to the logical model, the modified abstract query into the physical query."

However, Chu discloses "transforming, with reference to the logical model, the modified abstract query into the physical query" (column 4, lines 19-26).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "transforming, with reference to the logical model, the modified abstract query into the physical query" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 42, Olson teaches

A computer system, comprising memory and at least one processor, and further comprising: (see abstract and background)

a logical model stored in physical storage space and comprising a plurality of logical field definitions mapping to physical fields of physical entities of data (taking a virtual source and physical source and mapping columns, paragraph [0082]), and wherein each logical field definition references an access method describing a manner of accessing a respective physical field, whereby the logical model provides a logical view of the data; (binding plan maps between virtual and physical, paragraph [0082]) a processor; (paragraph [0025])

and a runtime component which, when executed by the processor, is configured to at least (i) receive an abstract query comprising at least one condition with a reference to at least one of the logical field definitions (isomorphic query, paragraph [0080]), a value for the at least one logical field (paragraph [0080]).

Olson does not explicitly indicate "(ii) change an element of the abstract query in an effort to satisfy the desired result size criterion", "at least one user-selected result size criterion specifying a desired result set size to be returned".

However, Chu discloses "(ii) change an element of the abstract query in an effort to satisfy the desired result size criterion" (relaxes, column 4, lines 36-43), "at least one user-selected result size criterion specifying a desired result set size to be returned" (user can relax, column 1, lines 25-27; at least (n), column 6, lines 14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "(ii) change an element of the abstract query in an effort to satisfy the desired result size criterion", "at least one user-selected result size criterion specifying a desired result set size to be returned" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 43, Olson teaches

the at least one of the logical field definitions (paragraph [0082])

Olson does not explicitly indicate "comprises an attribute indicating that the element may be changed."

However, Chu discloses "comprises an attribute indicating that the element may be changed" (column 6, lines 5-16).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "comprises an attribute indicating that the element may be changed" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 44,

Olson does not explicitly indicate "the abstract query further comprises a limitation on an extent of permitted change to the element."

However, Chu discloses "the abstract query further comprises a limitation on an extent of permitted change to the element" (WITHIN, column 5, lines 45-55).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the abstract query further comprises a limitation on an extent of permitted change to the element" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

As per claim 45,

each for a different logical field definitions (paragraph [0082])

Olson does not explicitly indicate "the element is a value and wherein the abstract query further comprises a plurality of values ... and wherein the runtime component is configured to change each of the values to produce different permutations of the abstract query in an effort to satisfy the result size criterion."

However, Chu discloses "the element is a value and wherein the abstract query further comprises a plurality of values ... and wherein the runtime component is configured to change each of the values to produce different permutations of the abstract query in an effort to satisfy the result size criterion" (column 4, lines 44-62).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine Olson and Chu because using the steps of "the element is a value and wherein the abstract query further comprises a plurality of values ... and wherein the runtime component is configured to change each of the values to produce different permutations of the abstract query in an effort to satisfy the result size criterion" would have given those skilled in the art the tools to improve the invention by allowing approximate answers to be returned. This gives the user the advantage of being able to build more useful queries.

(10) Response to Argument

With regard to Applicant arguments regarding the 35 U.S.C. 103(a) rejection of claims 1,12,19,33, and 42 over Olson et al. ('Olson' hereinafter) (Publication Number

2001/0016843) in view of Chu (Patent Number 5,956,707), it is respectfully submitted that this reference does in fact teach these claims. Applicant argues that Olson does not teach logical models where physical columns are filtered and expose a new, abstract column. As noted by the Applicant, Olson teaches binding plans as follows:

> "Using the Administrator, logical sources are mapped to physical sources, creating what is referred to a "binding plan". A binding plan consists of source binding, where each source binding consists of taking a virtual source and a physical source and mapping their columns, such that every column in the former is mapped to some column in the latter ("column" binding). While column bindings are onto maps, they are not necessarily injective. That is, every logical column is mapped to some physical column, but the converse is not necessarily true. Thus, column bindings make up source bindings, which in turn make up binding plans.
>
> "Using the Designer, the query designer constructs a "virtual" query using "virtual" sources. Then binding plans are attached and the query is executed in the context of a particular binding plan. In Cerebellum, binding plans enable the logical design of queries and sources to be done independently of the details of the underlying physical sources." (paragraphs [0082] and [0083])

The above citation shows that the columns are mapped and that the columns are exposed in such a way that logical queries can be made against the logical columns. Given this information, the Applicant further argues that the new mapping is simply a mapping relationship and does not describe an access method that describes how to access the corresponding physical field. It is respectfully submitted that Olson in fact contains these limitations. In explanation, Olson's binding of the virtual to the physical deals with the complex task of mapping from data on distributed, heterogeneous sources of data, and his mapping is not so simple, as shown by the following citations:

> "The problem of retrieving and manipulating data on a set of distributed, heterogeneous datasources is a highly complex one. Without the advances in agent and object oriented technologies, CORBA/DCOM infrastructure, and recent innovations in the Java programming model, the solvability of such a

> problem would be, in fact, doubtful. The system 10 builds on the available state-of-the-art technology to make disparate data integration a viable reality." (paragraph [0116])
>
> "Cerebellum presents abstract entities like a physical source to users that provide a database-independent set of properties. The metadata layer has intelligence to map very specific properties of physical sources (database tables) to more generic properties of abstract entities (physical sources). The intelligence in mapping abstract to physical layers 32 involves writing the mechanism for an abstract entity to set it properties based on a physical entity. For example, a database has a property call "tables". The metadata layer has the intelligence to know how to get the list of "tables" from an Oracle 8.0.3 database by passing it a certain set of commands specific it." (paragraph [0118])

So, as Olson shows, the mapping from the logical to the physical is not a simple mapping as argued by the Applicant. In fact, abstract columns that are exposed in the same manner to a user requesting a query might in fact be on any one of multitude of datasources, necessitating different manners of access as claimed in the instant application. Therefore, it is respectfully submitted that Olson does in fact teach wherein each logical field is defined by the logical model to include an access method describing a manner of accessing the corresponding physical field.

The Applicant further argues that Olson does not teach "wherein the abstract query is defined with respect to at least one logical field of the logical model and wherein at least one value is specified for the at least one logical field". Applicant argues that Olson used the binding plan for managing, extracting, and displaying information from multiple data sources, and while this is true that is not the only function of the Olson reference, as shown above. Olson also has an interface for the user to interact with which are mapped to the underlying data source:

> "Each glyph has a corresponding properties box. The properties box allows the user to specify information required by the glyph.

> "A parser 24 is a program that understands and interprets a language. The purpose of the parser 24 is to convert the GQL query into one query object. This object serves as the basis for query optimization and generation. The object model maps closely to SQL (structured query language). The model begins with the 6 basic types of statements (Select, Insert, Update, Delete, Set Operation, and Stored Procedure). All diagrams will be converted from a set of glyphs into one of the aforementioned objects. The parser 24 removes redundant glyphs and merges all functionality into one place for further processing.
>
> "In the Designer GUI and GQL, all notions of sources of data refer to virtual sources. A virtual source is Cerebellum-specific and has no reference to anything physical. The binder 28 replaces references of virtual sources with physical sources. The binder 28 is driven via a user-selected binding plan which has a list of sourcebindings. These sourcebindings serve as the guidelines for the search and replace." (paragraphs [0125]-[0127])

Clearly, as shown in the above citation, the user is allowed to specify values for the logical columns (referring back to the columns in paragraph [0082] in the previous argument) in the virtual sources, which reads on the claimed logical field of the logical model, and this is turn is bound back to the physical sources. This clearly teaches the limitation in question.

Applicant further argues that Olson does not teach "wherein the modified abstract query is defined with respect to the at least one logical field". However, it is clear from the answer given to the previous argument that a query is defined with respect to at least one logical field (in paragraphs [0125]-[0127]), however the modified part of the limitation is taught in combination with the Chu reference, where the following is taught:

> "Each query includes one or more attributes. Taking, for example, an airline reservation database, the attributes will include departure city, arrival city, departure time, arrival time, cost, etc. The relaxation engine 30 relaxes the conditions of one or more of the attributes utilizing a Type Abstraction Hierarchy (TAH) structure which is stored in the TAH manager 34. The TAH structure includes at least one TAH consisting of leaves and nodes as will be described in detail below." (column 4, lines 36-44)

In this citation, Chu discloses attributes which can be relaxed (reads on modified) in order to satisfy the result set criterion as claimed in the instant application. Clearly Olson in view of Chu teaches this limitation.

In addition, the above Chu citation addresses the Applicant's next argument, that "the transformed physical query includes a reference to a physical field of at least one of the physical fields". Chu also teaches this limitation, where Chu's attributes read on the physical fields and his relaxation reads on the transformation of the physical query.

Applicant's final argument in this section is that Chu only teaches increasing the number of returned results but does not teach decreasing the number of returned results. It is respectfully submitted that the claims being argued do not specify increasing or decreasing of values specifically. In fact, these limitations are added in dependant claims respective to the argued independent claims (i.e. dependant claims 2, 16, 23, 27, and 37). In all of these dependant claims the added limitation specifies that one of increasing "or" decreasing is required (claim 2 specifies "or" while the other specified dependant claims specify "at least one of…"). It is therefore respectfully submitted that Chu reads on the claim as written, that Chu read on increasing the number of returned results.

The remaining arguments regarding specific sets of independent claims are repeated arguments that have been addressed above and in answer please be directed to the above respective argument answers.

Conclusion:

It is respectfully submitted that a combination of the references cited disclose the claimed abstract query component that changes query elements to provide a modified abstract query that returns a result set of a specific size. In light of the forgoing arguments, the examiner respectfully requests the honorable Board of Appeals and Interferences to sustain the rejection.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

/Jay Morrison/

Jay Morrison, Assistant Examiner, AU 2168

September 12, 2007

TIM VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

Conferees:

Tim Vo, SPE AU 2168

Pierre Vital, SPE AU 2169

PIERRE VITAL
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100